Sound and Vibration

Measuring Instruments General Catalog

MINI

2021 ~ 2022

RION CO., LTD.

RION was founded in 1944, with the aim of developing commercial products based on the scientific work carried out at the Kobayasi Institute of Physical Research. RION has always upheld the belief that acoustics is a science of great importance to the well-being and welfare of society. RION has continued to introduce products based on this philosophy.

RION's products comprise four main categories: "Hearing Instruments", "Medical Equipment", "Sound and Vibration Measuring instruments" and finally "Particle Counters".

RION products are used by individuals as well as governmental institutions, schools and universities, medical facilities, consultants, the service sector, agriculture and fishery industries, and all branches of the manufacturing industry. RION products are not only used domestically but exported to more than 60 countries all over the world.

RION Products

Quality | Ease of use | Reasonable cost

SOUND AND VIBRATION MEASURING INSTRUMENTS

Sound Level Meter | Vibration Meter

PARTICLE COUNTER

Airborne Particle Counter | Liquid-borne Particle Counter

HEARING INSTRUMENT

Rionet Hearing Instruments

BTE Type | Custom-made

MEDICAL EQUIPMENT

Audiometer

RION Green Products

With the aim of creating truly environment friendly products, RION has established the "RION Green Procurement Guidelines". We use them as a standard for product development and parts procurement, to ensure that we can offer products that do not contain any harmful or hazardous chemical substances. Such products are entitled to bear our original "RION Green Product" logo.

RION Green Product logo

★Design concept

The green leaves represent the natural environment.
The green circle protecting them symbolizes the ongoing cooperative efforts to reduce harmful substances, and it also is a zero that expresses the drive towards complete elimination of toxic content.

Other logos

RION Water-Resistant logo

The products with this logo have water-resistant performance.

This helps reduce failures caused by sudden rain showers. Choosing them, you would be at ease using them on site.

CE marking

Products being marketed in the EuropeanEconomic Area must display the CE mark.
※The CE mark is a self-certification by the manufacturer, asserting that the item fully meets the requirements of all relevant European Directives.

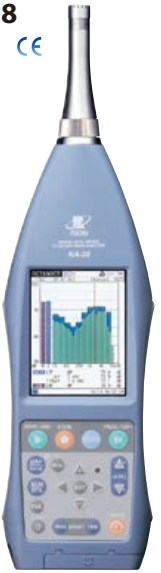
Sound Level Meter

Sound Level Meter class 1 and 1/3 octave band real-time analyzer

NA-28

CF-CARD

GREEN



Specifications

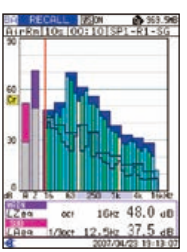
Applicable standards		IEC 61672-1: 2013/2002 class 1, IEC 61260-1: 2014 class 1, ANSI/ASA S1.4-2014/Part 1 class 1, ANSI S1.11-2004 class 1
Measurement items		L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N, L_P or $L_{eq,\ 1sec}$
Measurement level range		A weighting: 25 dB to 140 dB, C weighting: 33 dB to 140 dB, Z weighting: 38 dB to 140 dB
Measurement frequency range		10 Hz to 20 kHz
Analysis frequency range	Octave analysis	16 Hz to 16 kHz (max. 8 kHz during simultaneous octave and 1/3 octave band analysis)
	1/3 octave analysis	12.5 Hz to 20 kHz (max. 12.5 kHz during simultaneous octave and 1/3 octave band analysis)
Manual store		Manual recording of measurement results per address together with measurement start time
Auto store	Auto 1	Analyzer mode: Sampling cycle: 1 ms to 1 sec, $L_{eq,\ 1s}$
	Auto 2	Analyzer mode: Continuous recording on CF card of Main channel band levels and all-pass values and sub-channel all-pass values, together with measurement start time, for each measurement time interval
Dimensions, Weight		331 (H) × 89 (W) × 51 (D) mm, approx. 730 g (including batteries)

Building Acoustic Card

NX-28BA

Specifications

Measurement items	L_p, L_{eq}, L_{max}
Measurement types	Airborne sound insulation between rooms, measurement of floor impact sound insulation, N value or NC value, reverberation time, airborne sound insulation of facade elements and facades, sound level from service equipment



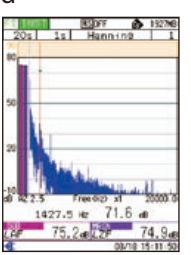
Overlay display of background noise measurement

FFT Analysis Card

NX-28FT

Specifications

Analysis frequency range	20 kHz (fixed)
Number of spectrum lines	8 000 (fixed) (frame time 400 ms, frequency resolution 2.5 Hz)



Measurement screen (zoom factor x1)

Waveform Recording Card

NX-28WR

Specifications

Sampling frequencies	Simultaneous analysis	48 kHz, 24 kHz, 12 kHz
	Sound level meter, octave band analysis, 1/3 octave band analysis	64 kHz, 32 kHz, 16 kHz
Recording functions	Event mode	Level recording, interval recording, manual recording
	Total mode	Total recording

● Re-analysing is available on the computer.

Sound Level Meter class1 **NL-52**

Sound Level Meter class2 **NL-42**

- No paper manual is needed
- Water-resistant (Except for the microphone)
- Use of rechargeable batteries
- Continuous detailed measurements for one month

SD-CARD

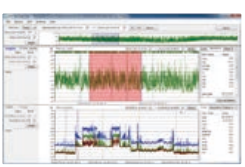
GREEN

Specifications		NL-52	NL-42
Applicable standards		IEC 61672-1: 2013/2002 class 1 ANSI/ASA S1.4-2014/Part 1 class 1	IEC 61672-1: 2013/2002 class 2 ANSI/ASA S1.4-2014/Part 1 class 2
		CE marking, WEEE Directives, Chinese RoHS (export model for China only)	
Processing		L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N (main ch) L_p (sub ch)	
Additional processing		L_{Ceq}, L_{Cpeak}, L_{Zpeak}, L_{AIeq}*2, L_{Atm5}	
Frequency range		10 Hz to 20 kHz	20 Hz to 8 kHz
Store	Manual	Data for measurement results are stored manually in single address increments.	
	Auto*2	Instantaneous values (L_p mode) and processed values (L_{eq} mode) are stored continuously and automatically at preset intervals.	
	Measurement time	Max.1 000 h (depends on the capacity of the SD Card)*1	
Waveform recording*3	File format	Uncompressed waveform WAVE file	
	Sampling frequency	Select 48 kHz, 24 kHz or 12 kHz	
Dimensions, Weight		Approx. 250 (H) x 76 (W) x 33 mm(D), approx. 400 g (with batteries)	

*1 Use Rion fully guaranteed products. *2 NX-42EX required (sold separately). *3 NX-42WR required (sold separately).

Data management software for environmental measurement **AS-60** (for NL-62/52/42, NL-32/31/22/21)

- Graph display of measurement data, arithmetic processing, exclusion sound processing, preparation of reports, output of files, and playback of real sound files.



Data management screen

Data Management Software For Environmental Measurement

(Includes octave and 1/3 octave data management software)

AS-60RT (for NX-62RT, NX-42RT, NA-28)*

*Only auto store data are supported.

- Adds support for handling octave band analysis data to AS-60

Extended function program **NX-42EX**

- When NX-42EX*1 is installed, NX-42WR, NX-42RT, NX-42RV*2 and NX-42FT can be added.

*1 The NX-42EX program cannot be uninstalled.
*2 NX-42RV requires that NX-42RT or NX-62RT is installed.

- Auto store function (instantaneous value, processed value)
- Comparator function
- Continuous data output function

Waveform recording program **NX-42WR** (for NL-62/52/42)

- This function enables users to record sounds and processing sound to process sound levels simultaneously. Recorded data can be played on computer and used for frequency analysis. (Uncompressed waveform WAVE file)

● Re-analysing is available on the computer.

Octave, 1/3 octave real-time analysis program **NX-42RT** (for NL-52/42)

- Enables octave band and 1/3 octave band analysis in real time

Reverberation Time Measurement Program **NX-42RV** (for NL-62/52/42)

- Enables reverberation time measurement.

*NX-42RV requires that NX-42RT or NX-62RT is installed.

FFT analysis program **NX-42FT** (for NL-62/52/42)

- Enables FFT analysis

Sound Level Meter

Sound Level Meter class 1

NL-62 (With low-frequency sound measurement function)

SD-CARD

GREEN

- Measure frequencies from 1 to 20 000 Hz.
  Measure low-frequency sound and noise with a single unit.

Specifications

Applicable standards		IEC 61672-1: 2013/2002 class 1, ISO 7196: 1995 ANSI/ASA S1.4-2014/Part 1 class 1
		CE marking, WEEE Directives, Chinese RoHS (export model for China only)
Processing		L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N (main ch) L_p (sub ch)
Additional processing		L_{Ceq}, L_{Geq}, L_{Cpeak}, L_{Zpeak}, L_{AIeq}, L_{AImax}
Frequency range		1 Hz to 20 kHz
Store	Manual	Data for measurement results are stored manually in single address increments.
	Auto	Instantaneous values (L_p mode) and processed values (L_{eq} mode) are stored continuously and automatically at preset intervals.
	Measurement time	Max.1 000 h (depends on the capacity of the SD Card)*1
Waveform recording*3	File format	Uncompressed waveform WAVE file
	Sampling frequency	Select 48 kHz, 24 kHz or 12 kHz
Dimensions, Weight		Approx. 255 (H) x 76 (W) x 33 mm(D), approx. 400 g (with batteries)

*1 Use Rion fully guaranteed products. *2 NX-42WR required (sold separately).

Octave, 1/3 Octave Real-time Analysis Program

NX-62RT

- Octave band and 1/3 octave band analysis can be performed.

You can use other optional programs and software with the NL-62, please refer page 5 and 20.

Sound Level Meter class 2

NL-27

GREEN

Specifications

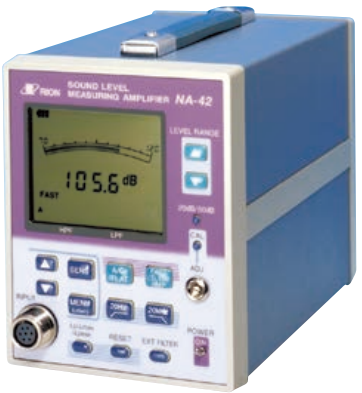
Applicable standards	IEC 61672-1: 2013 class 2, CE marking, WEEE Directive
Measurement functions	L_p, L_{eq}, L_E, L_{max}, L_{Cpeak}
Measurement level range	A-weighting: 30 dB to 137 dB, C-weighting: 36 dB to 137 dB
Dimensions, Weight	Approx. 120 mm (H) × 63 (W) × 23.5 mm (D), approx. 105 g (including batteries)

Measuring Amplifier

NA-42

(without microphone)

GREEN



Specifications

Measurement functions	L_p, L_{max}, L_{peak}
Measurement frequency range	1 Hz to 100 kHz (main unit characteristics)
Dimensions, Weight	171 (H) × 120 (W) × 236 (D) mm, approx. 1.8 kg (not including batteries)

Sound Level Meter Unit

UN-14

TEDS compliant

GREEN

CE

Specifications

Inputs	7-pin input connector	For measurement microphone or preamplifier (max. input voltage ±10 V) (excl. UC-34P connection) Microphone bias voltage +30 V, +60 V, +200 V
	BNC connector	For CCLD compliant microphone or preamplifier (24 V 4 mA) For TEDS compliant microphone (24 V 4 mA)
Measurement level range		A: 30 dB to 128 dB (using UC-59, NH-17) C: 36 dB to 128 dB (using UC-59, NH-17) Z: 41 dB to 128 dB (using UC-59, NH-17) (HPF 20 Hz, LPF 20 kHz)
Frequency range		1 Hz to 80 kHz (20 Hz to 40 kHz ±0.5 dB) (1 Hz to 80 kHz ±3 dB)
Dimensions, Weight		150 (H) × 36 (W) × 179 (D) mm (not including protruding parts), approx. 500 g

Sound Level Meter

Aircraft Noise Monitoring System

GREEN

Environmental Noise Monitor
NA-39A

- Compliant with IEC 61672-1: 2013 class 1. Standard configuration includes one-third octave frequency analysis function.

Sound Arrival Direction Identification Unit
AN-39D

- Elevation angle and direction angle are measured using four microphones, to identify sound source using sound arrival direction of aircraft operation sound and others.

SSR Receiver Unit
AN-39R

- Receives SSR (Secondary Surveillance Radar) information used for air traffic control.

Environmental Sound Monitor
NA-37

Noise Discrimination Unit
AN-37

- 3-axis microphone system allows determination of incident sound direction

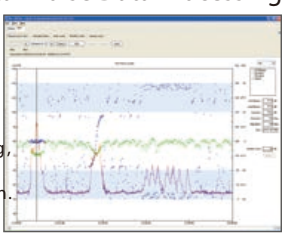
Environmental Noise Processing Program
NX-37A

- Allows automated measurement of basic data for environmental noise assessment, such as L_{eq} and L_N

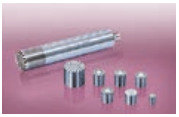
Environmental sound measurement screen example

Environmental Noise Data Processing Software
AS-40PA1

- Collects data measured by NX-37A and allows saving, editing, and report creation.



Display for the level direction elevation & direction angles



Condenser Microphones
UC Series

Model	UC-27	UC-34P	UC-35P	UC-30	UC-31	UC-33P	UC-52	UC-59	UC-57	UC-29	UC-54
Suitable preamplifier	NH-06A	NH-34 supplied	NH-35 supplied	NH-04A/ 05A/12A	NH-04A/ 05A/12A	NH-04A/ 05A/12A	NH-17/ 17A/22A	NH-17/ 17A/22A	NH-17/ 17A/22A	NH-05A (using UA-12)	NH-17/ 17A/22A (using UA-12)
Nominal diameter	1 inch			1/2 inch						1/4 inch	
Frequency response	Sound field	Sound field	Sound field	Sound field	Sound field	Sound pressure	Sound field	Sound field	Sound field	Sound field	Sound field
Measurement frequency range (Hz)	5 to 12 500	10 to 12 500	10 to 12 500	10 to 20 000	10 to 35 000	10 to 20 000	20 to 8 000	10 to 20 000	10 to 16 000	*2 20 to 100 000	*2 20 to 100 000
Bias voltage (V)	200	200	0	200	200	200	0	0	0	200	0
Sensitivity level (dB re 1 V/Pa) *1	−26.5	−21/−1 *5	0	−25.5	−37	−38	−33	−27	−22	−47	−48
Capacitance (pF)	54	—	—	17	20	20	19	13	14	6	4
Maximum input sound pressure level (dB) (Linearity tolerance ± 0.3 dB)	152	—	96	144	160 *4	160	150	148	132 *4	164 *4	164
Inherent noise level (dB)	12	2	4	20	26	28	24	18	13	42	45
Temperature coefficient (dB/˚C)	−0.005	—	—	−0.007	−0.007	−0.009	−0.008	within ±0.35 dB (at 1 kHz) *3	within ±0.45 dB (at 250 Hz) *3	−0.01	within ±0.7 dB (at 250 Hz) *3
Diaphragm	Titanium alloy									Titanium	
Dimensions (mm)	dia.23.8 x 21.0	dia.23.8 x 131	dia.23.8 x 132.7	dia.13.2 x 15.0	dia.13.2 x 13.2	dia.13.2 x 13.0	dia.13.2 x 12.0	dia.13.2 x 14.3	dia.13.2 x 13.5	dia.7.0 x 10.0	dia.7.0 x 10.0

∗1 Representative value for 1 kHz ∗2 UC-29/54 frequency range refers to microphone without grid. ∗3 −10 ˚C to +50 ˚C referenced to 23 ˚C ∗4 Distortion 3 %
∗5 Depend on connected instrument

Microphone With Preamplifier (TEDS compliant)

Model	UC-52T	UC-57T	UC-59T
Microphones	UC-52	UC-57	UC-59
Preamplifier	NH-22AT	NH-22AT	NH-22AT
Nominal diameter	1/2 inch		
Frequency response	Sound field	Sound field	Sound field
Measurement frequency range (Hz)	20～8 000	10～16 000	10～20 000
Drive current	2 mA～4 mA	2 mA～4 mA	2 mA～4 mA
A-weighted inherent noise level (dB)	24	13	18
Dimensions (mm)	ϕ13.2x97	ϕ13.2x98.5	ϕ13.2x99.4
Cable type	EC-90 series (BNC)	EC-90 series (BNC)	EC-90 series (BNC)

Preamplifiers
NH Series

Model	NH-06A	NH-04A	NH-12A	NH-17	NH-17A	NH-22A	NH-05A
Suitable microphones	UC-27/32P	UC-30/31/33P	UC-30/31/33P	UC-52/54 *1/ 57/59	UC-52/54 *1/ 57/59	UC-52/54 *1/57/59 (constant current drive) 2 mA to 4 mA	UC-29 *1 UC-30/31/33P
Nominal diameter	1 inch	1/2 inch, 1/4 inch *1					1/2 inch, 1/4 inch
Input impedance (GΩ)	3	3	3	3	3	6	10
Input capacitance (pF)	0.3	0.25	0.25	0.8	0.8	0.7	0.2
Measurement frequency range (Hz)	5 to 100 000	10 to 100 000	10 to 100 000	10 to 100 000	10 to 100 000	10 to 100 000	10 to 100 000
Bias voltage (V)	200	200	200	0	0	0	200
Gain (dB), representative value	−0.1 (54 pF) (UC-27)	−0.2 (17 pF) (UC-30)	−0.2 (17 pF) (UC-30)	−0.5 (13 pF) (UC-59)	−0.5 (13 pF) (UC-59)	−0.5 (13 pF) (UC-59)	−0.5 (6 pF) (UC-29) *1
A-weighted inherent noise level (dB)	12 (UC-27)	20 (UC-30)	20 (UC-30)	18 (UC-59)	18 (UC-59)	18 (UC-59)	42 (UC-29)
Output impedance (Ω)	100 or less	100 or less	100 or less	300 or less	300 or less	approx. 30	100 or less
Cable type	EC-04 series (7P)		1.5 m integrated (7P)	5 m integrated (7P)	EC-04 series (7P)	EC-90 series (BNC)	EC-04 series (7P)

∗1 Using UA-12

Pistonphone
NC-72B

CE GREEN

Specifications

Applicable standards	IEC 60942: 2017 class LS/M, class 1/M ANSI/ASA S1.40-2006 (R2016) class LS/C, class 1/C
Compatible microphones	1 inch, 1/2 inch, 1/4 inch types
Nominal sound pressure level	114 dB
Frequency	250 Hz
Dimensions, Weight	Approx. 62 (H) × 44(W) × 170 (D) mm, approx. 750 g (including batteries)

Sound Calibrator
NC-75

CE GREEN

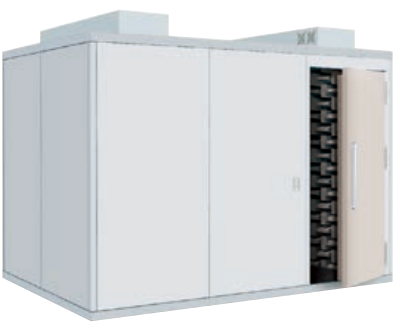
Specifications

Applicable standards	IEC 60942: 2017 class 1, ANSI/ASA S1.40-2006 class 1
Compatible microphones	1 inch, 1/2 inch, 1/4 inch types
Nominal sound pressure level	94 dB
Nominal frequency	1 000 Hz
Dimensions, Weight	Approx. 42 (H) × 77 (W) × 70 (D) mm, approx. 200 g (including batteries)

Related Products

Anechoic Box (Compact Type)

- Suitable for use in testing and developing small size precision instruments
- Wall reflections are damped for enhanced measurement accuracy
- Wedge-shaped absorber layer provides high sound absorption efficiency
- Compact dimensions and casters provide mobility
- Available as standard Type L, or Type H with higher sound insulation and absorption characteristics



Anechoic Room

- Can be assembled on site in existing buildings, which helps to keep costs low
- Enhanced sound insulation performance and additional facilities available as options
- Available as standard Type L, or Type H with higher sound insulation and absorption characteristics

Sound Proof Chamber

- Can be assembled on site in a short time
- Suitable for many applications, including acoustic measurements of small machinery and equipment, sound-shielded environment configuration, acoustic testing, hearing level testing and more
- Enhanced sound insulation performance and additional facilities available as options

Vibration Meter

Piezoelectric Accelerometers

Type	Triaxial type				With built-in amplifier			General-purpose	
External view									
	PV-97	PV-97C	PV-93	PV-97I	PV-90T	PV-91C	PV-91CH	PV-85/86	PV-94/95
Principle	Shear	Shear	Shear	Shear	Shear	Shear	Shear	Shear	Shear
Weight g	10	4.7	30	8	2	1.8	3	23	9
Charge sensitivity pC/(m/s²) ✳1	0.29	0.12	0.831	—	—	—	—	6.42	0.714
Voltage sensitivity mV/(m/s²) ✳1	—	—	—	1.1	0.5	1	11	—	—
Vibration frequency range (±1 dB) Hz ✳2	1 to 10 000 (Z) 1 to 5 000 (X·Y) (±10 %)	1 to 15 000 (Z) 1 to 10 000 (X·Y)	1 to 8 000 (2-axis) 1 to 4 000 (1·3)	1 to 7 000 (Z) ✳3 1 to 5 000 (X·Y) (±10 %)	1 to 12 000 (±10 %)	1 to 20 000 (±10 %) ✳4	1 to 15 000 (±10 %) ✳5	1 to 7 000	1 to 10 000
Temperature range for use ℃	–50 to +200	–50 to +160	–50 to +160	–20 to +125	–20 to +100 (TEDS: -20 to +85)	–50 to +170	–50 to +170	–50 to +160	–50 to +160

Type	High-output	Standard	Waterproof insulation	Compact / Lightweight			High-temperature		
External view									
	PV-87	PV-03	PV-10B	PV-90B	PV-08A	PV-90H	PV-44A	PV-63	PV-65
Principle	Shear	Compression	Compression	Shear	Shear	Shear	Compression	Shear	Shear
Weight g	115	38	120	1.2	0.7	2	29	28	26
Charge sensitivity pC/(m/s²) ✳1	40	0.47	—	0.18	0.102	0.29	7.65	4.59	7.14
Voltage sensitivity mV/(m/s²) ✳1	—	—	5.1	—	—	—	—	—	—
Vibration frequency range (±1 dB) Hz ✳2	1 to 3 000	20 to 1 000 (±1 %) Secondary calibration range.	3 to 8 000	1 to 25 000	1 to 25 000	1 to 20 000	1 to 10 000	1 to 8 000	1 to 9 000
Temperature range for use ℃	–50 to +160	–50 to +200	–20 to +100	–50 to +160	–50 to +160	–50 to +250	–50 to +260	–20 to +300	–50 to +260

✳1 Representative value; actual value is noted on calibration sheet supplied with accelerometer. ✳2 Representative value when mounted on flat surface according to standard mounting method. ✳3 Max. 100 ℃, max. 1000 m/s² ✳4 1 Hz to 2 Hz (±15 %) at 150 ℃ to 170 ℃ ✳5 0.6 Hz to 20 kHz (±20 %), 0.5 Hz to 20 kHz (±30 %)

Note ● The piezoelectric element in a piezoelectric accelerometer may be damaged by excessive shock. Do not drop the accelerometer, and handle the magnetic attachment with care.

Servo Accelerometer

LS-40C / 10C

GREEN

Specifications	LS-40C	LS-10C
Voltage sensitivity	0.5 V/(m/s²) ±1 % (DC)	0.3 V/(m/s²) ±1 % (DC)
Measurement frequency range	DC to 100 Hz (±10 %)	DC to 100 Hz (±10 %)
Power supply voltage	±15 V DC (±11 V to ±18 V)	±15 V DC (±11 V to ±18 V)
Dimensions, Weight	37 (H) × 37 (W) × 40 (D) mm, approx. 230 g (including cable)	37 (H) × 37 (W) × 40 (D) mm, approx. 220 g (including cable)

Calibration Exciter

VE-10

GREEN

Specifications	
Exciter frequency	159.2 Hz ±1 %
Exciter acceleration	10 m/s² (rms) ±3 %
Exciter velocity	10 mm/s (rms) ±4 %
Exciter displacement	10 µm (rms) ±5 %
Dimensions, Weight	Approx. dia.51×134 (H) mm, approx. 600 g (including batteries)

Vibration Meter

SD-CARD

Tri-axial Groundborne Vibration Meter
VM-56

GREEN

WATER-RESISTANT

Specifications

Applicable standards	DIN 45669-1: 2010-09 (Frequency, Measurement range compliance), SBR Meten en beoordelen van trillingen, Deel A: Schade aan gebouwen 2010, Deel B: Hinder voor personen 2013, ISO 8041: 2005, ISO 8041-1: 2017, CE marking, WEEE directive
Measurement range	Measurement frequency setting is 1 to 80 Hz, defining the following range
Measurement range for VM-56	Vibration velocity: 0.03 to 100 mm/s Weighted vibration amount: 0.02 to 100 mm/s (Reference 16 Hz) Maximum absolute waveform value: 0.05 to 100 mm/s (Reference 16 Hz) Vibration acceleration: 0.0003 to 10 m/s^2 Displacement (0-p): 0.01 to 10 mm (0.5 to 4 Hz)
	Measurement range compliant with SBR-Deel B Vibration velocity: 0.02 to 100 mm/s (Frequency bandwidth 1 to 80 Hz)
Dimensions and weight	Approx. 175 mm (H) x 175 mm (W) x 40 mm (D) mm, approx. 780 g (incl. batteries)

Waveform Analysis Software for Groundborne Vibration
AS-70GV

Allows use of WAV files recorded with VM-56 + VX-56WR for graph display, level processing, frequency analysis, recalculation, and file output.

Excel macro for report output
(free of charge)

Facilitates the creation of reports from measurement data.

3-Axis Vibration Meter
VM-54

GREEN

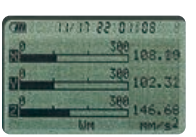
Specifications

Inputs	3 channels (with 3-channel vibration input preamplifier)
Measurement frequency range	0.5 Hz to 5 000 Hz
Dimensions, Weight	56 (H) × 200 (W) × 175 (D) mm, approx. 1 kg (including batteries)

Marine Vibration Card
VX-54WS

Specifications

Applicable standards	ISO 6954: 2000
Input	Piezoelectric Accelerometer PV-83CW (triaxial)
Measurement frequency range	1 Hz to 80 Hz (with FLAT characteristics of PV-57A up to 1 kHz)
Processing functions	RMS, max (MTVV), min



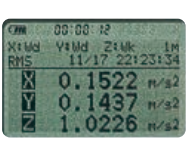
Graphic screen

PV-83CW
(supplied)

Whole Body Vibration Card
VX-54WB1

Specifications

Applicable standards	ISO 2631-1: 1997, ISO 2631-2: 2003, ISO 8041: 2005
Input	Seat Accelerometer PV-62 (triaxial)
Measurement frequency range	0.5 Hz to 80 Hz
Processing functions	RMS, MTVV, VDV, Synthesized Value, PEAK, Crest Factor



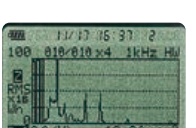
Numeric screen

Seat Accelerometer
PV-62
(option)

Hand-Arm Vibration Card
VX-54WH

Specifications

Applicable standards	ISO 5349-1: 2001, ISO 5349-2: 2001, ISO 8041: 2005
Input	Piezoelectric Accelerometer PV-97C/97I (triaxial), etc
Measurement frequency range	8 Hz to 1 000 Hz
Processing functions	RMS, MTVV, VDV, Synthesized Value, PEAK, Crest Factor



FFT screen (using VX-54FT)

PV-97C
(option)

PV-97I
(option)

POCKETABLE VIBRATION METER (RIOVIBRO)
VM-63C

GREEN

Specifications

Measurement range	Acceleration	0.1 m/s² to 199.9 m/s² EQ PEAK (RMS × √2)・10 Hz to 15 kHz
	Velocity	0.1 mm/s to 199.9 mm/s RMS・10 Hz to 1 kHz
	Displacement	0.001 mm to 1.999 mm EQ P-P (RMS × 2 √2)・10 Hz to 1 kHz
Dimensions, Weight		Approx. 178 (H) × 64 (W) × 27 (D) mm, approx. 200 g

General-Purpose Vibration Meter
VM-82A

GREEN

Specifications

Measurement range			
Acceleration	0.02 m/s² to 200 m/s²	EQ PEAK	1 Hz to 5 kHz
Velocity	0.3 mm/s to 1 000 mm/s	RMS	3 Hz to 1 kHz
	0.1 mm/s to 1 000 mm/s	RMS	10 Hz to 1 kHz
Displacement	0.02 mm to 100 mm	EQ PEAK	3 Hz to 500 Hz
	0.001 mm to 100 mm	EQ PEAK	10 Hz to 500 Hz
Dimensions, Weight	Approx. 171.5 (H) × 74 (W) × 25.5 (D) mm, approx. 270 g (incruding batteries)		

General-Purpose Vibration Meter
VM-83

GREEN

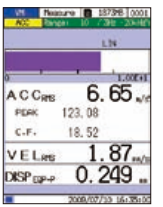
Specifications

Vibration frequency range	Piezoelectric accelerometer	
	Acceleration	1 Hz to 20 kHz ±5 %
	Velocity	1 Hz to 3 Hz ±10 %, 3 Hz to 3 kHz ±5 %
	Displacement	1 Hz to 3 Hz ±20 %, 3 Hz to 500 Hz ±10 %
	Servo accelerometer	
	Acceleration	0.1 Hz to 100 Hz ±5 %
	Velocity	0.1 Hz to 0.3 Hz ±10 %, 0.3 Hz to 100 Hz ±5 %
	Displacement	0.1 Hz to 0.3 Hz ±20 %, 0.3 Hz to 100 Hz ±10 %
Dimensions, Weight		171 (H) × 120 (W) × 234 (D) mm, approx. 1.8 kg

Vibration Analyzer
VA-12

GREEN

SD-CARD



Vibration meter mode

Specifications

Applicable standards		CE marking, WEEE Directive, Chinese RoHS (export model for China only)
Input range (Vibration meter mode)		Measurement range (using PV-57I, High-pass filter 3 Hz, Low-pass filter 20 kHz)
	ACC (Acceleration)	0.02 to 141.4 m/s² (rms) Continuous measurement, 1 Hz to 5 kHz, waveform peak value, crest factor
	Instantaneous maximum acceleration	700 m/s²
	VEL (Velocity)	0.2 to 141.4 mm/s (rms) at 159.15 Hz
	DISP (Displacement)	0.02 to 40.0 mm (EQp-p) at 15.915 Hz
FFT mode		Time waveform, spectrum, Acceleration envelope curve
	Analysis points	512, 1 024, 2 048, 4 096, 8 192 (3 200 lines)
	Time window functions	Rectangular, Hanning, Flat-top
	Processing	Linear average, maximum, exponential averaging, instantaneous value
	Frequency span	100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 5 kHz, 10 kHz, 20 kHz
Memory		
	Memory media	SD cards (max. 2 GB)*
	Store files	Sets of measurement values and parameters can be stored on memory card 1 000 data saved as one store name. Max. number of store names: 100
	Parameter setting	Up to 5 parameter sets can be stored in unit
	memory	Parameter settings can be stored on memory card
	Wave files	Up to 10 seconds per file (frequency range 20 kHz) Vibration waveform recorded during FFT processing available when using a computer.
	BMP files	Screen capture can be saved as BMP files.
	Recall function	Measurement data can be read from memory card and redisplayed on screen.
Dimensions, Weight		214 (H) x 105 (W) x 36 (D) mm (without protective cover), approx. 850 g (incl. batteries,with protective cover, PV-57I connected)

*Use only RION supplied cards for assured operation

● Re-analysing is available on the computer.

Vibration Meter Unit **UV-15**

TEDS compliant

GREEN

Specifications

Inputs	Microdot connector	For piezoelectric accelerometer (Maximum input charge 100 000 pC)
	CCLD (Constant Current Line Drive)	Accelerometer with integrated preamplifier (24 V 4 mA) Accelerometer with TEDS compliant integrated preamplifier (24 V 4 mA)
	7-pin preamp connector (Connector type PRC-03)	For piezoelectric accelerometer connected via preamplifier (VP-26A) (Maximum input voltage ±10 V)
Measurement frequency range		Acceleration (ACC), Velocity (VEL), Displacement (DISP)
Dimensions, Weight		150 (H) × 36 (W) × 179 (D) mm (not including protruding parts), approx. 500 g

2-Channel Charge Amplifier **UV-16**

GREEN

Specifications

Inputs	Piezoelectric accelerometer Accelerometer with integrated preamplifier (24 V 4 mA)
Measurement frequency range	Acceleration (ACC), Velocity (VEL), Displacement (DISP)
Dimensions, Weight	150 (H) × 36 (W) × 179 (D) mm (not including protruding parts), approx. 500 g

Interface Unit **UV-22**

GREEN

Specifications

Settings control (for UN-14 and UV-15)	Input selection, sensitivity, HPF, LPF, user filter
Computer interfaces	USB, Ethernet
Dimensions, Weight	150 (H) × 36 (W) × 179 (D) mm, approx. 500 g

Battery Unit **BP-17**

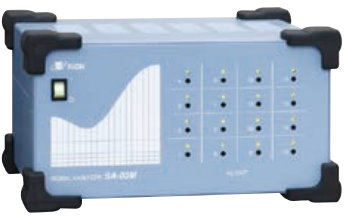
Link to UV-15/UV-16/UN-14 to provide power

- Battery power can be used to drive up to three units (AC adapter connection allows connection of 1 to 16 units)
- Holds eight IEC R14 (size C) batteries

Frequency Analyzer

Multi-Channel Signal Analyzer
SA-02M 4ch 8ch 12ch 16ch

GREEN

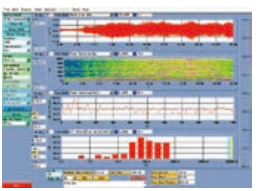


4-Channel Signal Analyzer
SA-02A4 4ch

GREEN

Standard Software

Time waveform display / FFT analysis /
Time waveform recording / Power spectrum map, octave map /
Transfer function, coherence function /
Octave band analysis / Recall processing / Overlay display /
Auto-correlation function / Cross-correlation function
Amplitude probability density function



Basic screen layout

Specifications

Applicable standards			IEC 61260-1:2014 class 1 (Filter), WEEE Directive, RoHS Directive, Chinese RoHS Directive
Frequency range			DC to 40 kHz
FFT analyzer section	Analysis frequencies		100 Hz / 200 Hz / 500 Hz / 1 kHz / 2 kHz / 5 kHz / 10 kHz / 20 kHz / 40 kHz
	Number of analysis points		64 / 128 / 256 / 512 / 1 024 / 2 048 / 4 096 / 8 192 / 16 384 / 32 768
	Time window functions		Rectangular / Hanning / Flat-top / Exponential / Force Exponential
	Functions		
		Frequency domain	Spectrum, cross-spectrum, transfer function, coherence
		Time domain	Autocorrelation, cross-correlation, amplitude probability density, amplitude probability distribution
Octave band analyzer section	Analysis mode		1/1, 1/3, 1/12
Input/output section			AC output connectors / Trigger input connector / Rotary pulse input connector
Dimensions, Weight	SA-02A4		58 (H) x 260 (W) x 210 (D) mm (without protruding parts and rubber feet), approx. 2.5 kg
	SA-02M		151 (H) x 290 (W) x 249 (D) mm (without protruding parts and rubber feet), approx. 5.4 kg (4 channels installed)

Intensity Probe

Sound Intensity Probe
SI-31I

Specifications

Shape	12 mm: 200 Hz to 5 kHz,
(Effective acoustic distance)	50 mm: 50 Hz to 1.2 kHz

Triaxial Simultaneous Measurement Intensity Probe
SI-33I

Specifications

Shape	31 mm: 100 Hz to 2 kHz,
(Effective acoustic distance)	50 mm: 50 Hz to 1.2 kHz

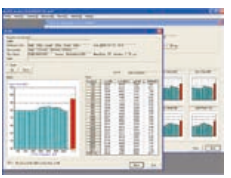
Dedicated Analysis Software

Airborne Noise/Floor Impact Noise Insulation Measurement Software
AS-20PE5

- Designed for sound insulation measurement of buildings and building materials based on JIS specifications. Measurement and evaluation for the categories of reverberation time, floor impact sound and attenuation, airborne sound, and sound absorption in a reverberation room are possible.

Sound Power Level Measurement Software for Hemi-anechoic room
AS-30PA5

- Allows 1/3 octave band sound power level measurements, according to specifications for sound power level measurements in hemi-anechoic chambers.



Loss Factor Measurement Software
AS-14PA5

- Using the center excitation method or cantilever method, the frequency response of a strip specimen is measured, and the resonance characteristics are used to determine the loss factor and Young's modulus (or shear coefficient) of the specimen according to the half-power bandwidth method.

Sound Intensity Measurement Software
AS-15PA5

- Calculates sound intensity and performs graphics processing.

Mode Analysis Software
ME' Scope VES

- Allows direct linking of SA-02 and mode analysis software

Sound Quality Evaluation Software
CAT-SA02-SQ

- WAVE data collected with the SA-02 and similar data can be imported into a measurement data file and used to calculate psychoacoustic evaluation quantities.

Hand-arm Vibration Measurement Software
CAT-SA02-HT

- Frequency-weighted acceleration rms values are measured for the X, Y, Z axes simultaneously.
From these values (a_{hwx}, a_{hwy}, a_{hwz}), the software determines the triaxial combined value a_{hv}.

Waveform Data Manipulation Software
CAT-SA32

- Versatile data manipulation
- Arithmetic processing
- Storing manipulated data
- FFT processing
- Overlay display
- Data import function

This software is a product of Vibrant Technology Inc.

Sound Power Level Measurement Software for reverberation room
AS-31PA5

- Supports direct and comparative measurement. Also allows reverberation time measurement. Supports multi-channel measurement and microphone rotator use.

Sound Source Location Software
AS-16PA5

- Determines sound incident direction using a 3-axis sound intensity probe, and displays it on screen along with a camera image.

Tracking Analysis Software
CAT-SA02-Order

- Rotation data and sound/vibration data are recorded simultaneously to analyze the rotation order ratio.

Array Type Visualization Software
CAT-SA02-AR

- Sound pressure level fluctuations and changes are made visible using a 32-microphone array.

Construction Machinery Sound Power Level Measurement System
CAT-SA02-CPWL

- Using an Excel macro, the sound power level of construction machinery can be measured.

Throughput Disk
CAT-SA02-TH

- Long-term time waveform recording

Report Creation Support Tool
CAT-Report

- Excel add-on
- XY graph
- Ease of operation
- Cell linking function

This software is a product of Catec Inc.

Portable Multi-function Measuring System

RIONOTE

SD-CARD

Compact design, easy and intuitive operation

RIONOTE is combining the newest technology with the traditional virtues of RION; quality, ease of use and economical sense. The Main Control Unit is easy and intuitive to operate, with the dedicated program of your choice, all on a large color touch screen. RION will continuously develop both programs and hardware for this measuring system of the future.

GREEN

Wireless connections
Use it anytime anywhere!

＊Selling of Wireless dock (SA-A1WD) & Wireless Sensor Amplifier (SA-A1WL1) differs from each country. Please contact us for further questions.

RIONOTE enables the use of a wireless dock or wireless sensor amplifiers to avoid the cost and hassle of cables. A plurality of wireless docks and wireless sensor amplifiers can be used simultaneously, up to 16 channels, to store the measured data in the Main Control Unit as well as in the memory of wireless dock or wireless sensor amplifiers.

RIONOTE Main Control Unit and Amplifier **SA-A1B4/B2**

- Supports direct connection of microphones and piezoelectric accelerometers.

Sensor amplifier slides into the underside of main unit

Specifications (Main control unit and 4ch amplifier)

Number of channels	4, BNC connectors
CCLD	2 mA 24 V (4 mA Factory option)
Frequency Range	DC to 20 kHz or 0.25 Hz to 20 kHz
Dynamic range	100 dB or better
A/D converter	24 bit
Display	10.1 inch TFT color LCD
Touch panel	Multi-touch
SD card	Max. 32 GB
Power supply	Li-Ion battery, AC adapter
Dimensions, Weight	188 (H) x 275 (W) x 40 (D) mm
	SA-A1: 1 200 g (incl. 280 g battery)

＊Selling of Wireless dock (SA-A1WD) differs from each country.
Please contact us for further questions.

RIONOTE Wireless Dock
SA-A1WD (and Amplifier)

Separate type wireless dock and amplifier
(2 channel or 4 channel configuration)

GREEN

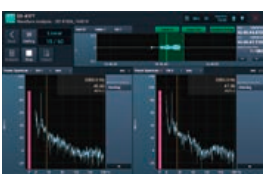
Specifications

Inpu	4 or 2 channels (Amplifier SA-A1B4/B2 needed)
Signal transfer to main platform	
Wired	Ethernet 100 base-TX
Wireless	WLAN (IEEE802.11a/b/g/n)
Distance of wireless transfer	about 50 m＊
Dimensions, Weight	Approx. 42 (H) × 193 (W) × 95 (D) mm, approx. 500 g (incl. battery)

＊ Depending on usage conditions

RIONOTE Program for FFT Analysis
SX-A1FT

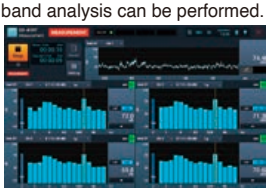
FFT analysis can be performed.



Analysis frequencies	100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 5 kHz, 10 kHz, 20 kHz
Arithmetic functions	Time waveform for 1 frame, Power spectrum, Cross spectrum, Transfer function, Coherence
Window functions	Rectangular, Hanning, Flat-top, Exponential, Force
Number of analysis points	256, 512, 1 024, 2 048, 4 096, 8 192, 16 384

RIONOTE Program for 1/3 Octave Analysis
SX-A1RT

Octave band and 1/3 octave band analysis can be performed.



Standard compliance	IEC 61260-1: 2014 class1, ANSI/ASA S1.11-1-2014
Band filter center frequencies and number of bands	
Octave bands	0.5 to 16 000 Hz, 16 bands Max. 4 channels
1/3 octave bands	0.4 to 20 000 Hz, 48 bands Max. 3 channels
Instantaneous value data (every 100 ms)	L_P, L_{eq}, L_{max}
Processing value data	L_{eq}, L_E, L_{max}, L_{min}, L_N

RIONOTE Program for Waveform Recording
SX-A1WR

It is possible to display and record the time waveform.

Frequency range	100 Hz, 500 Hz, 1 kHz, 5 kHz, 10 kHz, 20 kHz
Quantization	16 bit/24 bit
Voice memo marker function	Yes
Monitor output (playback)	Allows listening to recorded data
Recorded data	WAVE format

● Re-analysing is available on the computer.

Vibration Analysis Program
SX-A1VA

Adds vibration measurement functions.

Judgement Program (Pass/Fail Evaluation)
SX-A1CMP

Suitable for pass/fail evaluation of noise, vibrations and other phenomena in production or inspection lines.

Order Tracking Program
CAT-SAA1-ORDTRK

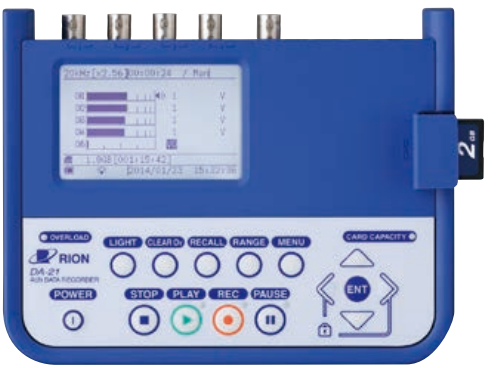
(This software is a product of Catec Inc.)

Adds order tracking analysis functions.

4 channel Data Recorder
DA-21

SD-CARD

GREEN



Specifications

Input section	Signal input	4ch (BNC)
	CCLD (Constant Current Line Drive)	2 mA, 24 V
	Frequency response	DC coupling DC to 1 Hz: ±1.0 dB, 1 Hz to 12.5 kHz: ±0.5 dB, 12.5 kHz to 20 kHz: ±1.0 dB AC coupling 1Hz : ±1.0 dB, 1 Hz to 12.5 kHz: ±0.5 dB, 12.5 kHz to 20 kHz: ±1.0 dB
Recording section	Media	SD card [up to 32 GB (FAT16/32)] (Use RION supplied cards for assured operation)
Dimensions, Weight		Approx. 140 (H) x 175 (W) x 45 (D) mm, approx. 450 g (not including batteries), approx. 770 g (including batteries)

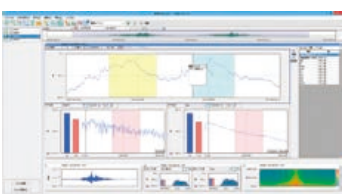
● Re-analysing is available on the computer.

Waveform Analysis Software
AS-70

Applicable to : RIONOTE, NX-42WR, NX-28WR, DA-21/20/40, VA-12, VX-55WR, SX-A1VA

Specifications

Waveform analysis	Processing	Maximum value, minimum value, average value, effective value, distribution, differentiation and integration, HPF, LPF
FFT analysis	Number of analysis points	32 to 65 536
	Data view	Power spectrum, power spectrum density, spectrogram
Octave band analysis	Applicable standards	IEC 61260-1 : 2014, JIS C 1513-1 : 2020 class 1 (Filter), JIS C 1514 : 2002 class 1
	Frequency range	1/1 octave band 0.5 Hz to 16 kHz (16 bands) 1/3 octave band 0.4 Hz to 20 kHz (48 bands)



Waveform analysis screen example

Related Products

Tapping Machine
Light Floor Impact Sound Generator
FI-01A

GREEN

Specifications

Applicable standards	ISO 10140-5, ISO 16283-2
Hammers Number and Spacing	5 hammers are arrayed at 100 mm intervals in a straight line
Average time between floor impacts of each hammer	100 ±5 ms
Interface	RS-232C
Dimensions, Weight	Approx. 230 (H) x 265 (W) x 557 (D) mm, approx. 10 kg

Impact Ball
YI-01

GREEN

Specifications

Equivalent mass	2.5 ±0.1 kg
Drop height	1 m
Shape	Hollow sphere with 32 mm thick wall and 178 mm external diameter
Rebound coefficient	0.8 ±0.1

Random Noise Generator
SF-06

Specifications

Output frequency range	White noise, Pink noise (bandwidth 20 Hz to 20 kHz) Octave band noise
Output signal level	Approx. 5.6 Vrms
Output level range	0 dB to –60 dB
Octave bands	31.5 Hz to 8 kHz
Dimensions, Weight	168(H)×198(W)×270(D)mm, approx. 3 kg

Related Products

Acoustical Volume Meter

(For combustion chamber volume measurement)

CE

- Regardless of the shape, the combustion chamber volume can be measured by simply placing the volume meter on the combustion chamber cavity of the cylinder head, as shown in the picture.

- Instead of using a spark plug of the assembled engine, special adapters are used to connect to the volume meter so that the combustion chamber volume can be measured.

Acoustical Volume Meter

CE

- Unlike the conventional method of the Archimedes principle (where the target object is immersed in water), this system allows volume measurement of the target object in dry conditions.

Viscotester
VT-06

GREEN

Specifications

Measurement range	0.3 dPa.s to 4 000 dPa.s
Sample fluid capacity	No.1 or No. 2 rotor Approx. 300 mL (using JIS compliant 300 mL beaker)
	No. 3 rotor Approx. 170 mL (using No.3 cup) Lower rotor edge lifted about 15 mm from bottom of cup
Measurement accuracy	± 10 % ± 1 digit of indicated value, reproducibility ± 5 %
Dimensions, Weight	175 (H) × 77 (W) × 40 (D) mm (not including protruding parts), approx. 260 g (not including batteries)

Vibration Meter

SD-CARD

Vibration Level Meter
VM-55

GREEN

Specifications

Applicable standards	Weight and Measure Act (Vibration Level Meters) JIS C 1510 : 1995, JIS C 1517 : 2014
Measurement functions	3-axis simultaneous measurement supported L_v, L_{va}, Maximum value hold
Processing measurement	L_{eq}, L_5, L_{10}, L_{50}, L_{90}, L_{95}, L_{max}, L_{min}
Measurement frequency range	Vibration level 1 to 80 Hz, Vibration acceleration level 1 to 80 Hz
Measurement level range	Vibration level, vertical direction 25 to 129 dB Vibration level, horizontal direction 30 to 122 dB Vibration acceleration level 30 to 129 dB
Dimensions, Weight	Approx. 175 (H) × 175 (W) × 40 (D) mm, approx. 780 g (incl. batteries)

Data management software for environmental measurement
AS-60VM (Includes the vibration level data management software)
Adds support for handling data measured with VM-55EX/53A to AS-60

https://rion-sv.com/

JCSS 0197

RION CO., LTD. is recognized by the JCSS which uses ISO/IEC 17025 as an accreditation standard and bases its accreditation scheme on ISO/IEC 17011. JCSS is operated by the accreditation body (IA Japan) which is a signatory to the Asia Pacific Accreditation Cooperation (APAC) as well as the International Laboratory Accreditation Cooperation (ILAC). The Quality Assurance Section of RION CO., LTD. is an international MRA compliant JCSS operator with the accreditation number JCSS 0197.

ISO 14001 RION CO., LTD.
ISO 9001 RION CO., LTD.

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